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High-resolution ultrasound of the pudendal nerve: normal anatomy

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The purpose of the study was to assess if high-resolution ultrasound (US) is able to identify the pudendal nerve and its terminal branches and to identify the best approach to visualize these structures.

Normal anatomy of the pudendal nerve has been evaluated on 3 cadavers and 20 healthy volunteers at the level of ischial spine and distally with low- (2-5 MHz) and high-frequency (12-7 MHz and 17-5 MHz) transducers. Two musculoskeletal radiologists performed the US examinations and evaluations. Volunteers were placed in three different positions allowing different approaches (posterior, medial, anterior trans-perineal). A 0-3 scale was used to assess nerve visibility. US examination was repeated after 1 month to assess inter- and intra-observer agreement. Non-parametric and K-based statistical analysis was performed.

The visualization of the pudendal nerve at the ischial spine resulted better with a medial approach ($p<0.004$). The terminal branches resulted better visualized with the anterior approach ($p<0.002$). Intra-observer and inter-observer agreement were good ($k=0.88$ and $K=0.81$).

High-resolution ultrasound (US) is able to identify the pudendal nerve and its terminal branches. A medial approach is better to visualize the pudendal nerve at the ischial spine. The terminal branches are better visualized with the anterior approach.

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